

Transfer of Learning in Continuing Medical Education (CME): A Conceptual Model

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Transfer of learning has been an age-old concern for HRD professionals. With physicians expected to update their skills and knowledge regularly to improve healthcare, research has shown that these newly acquired skills and knowledge may or may not be implemented into practice (Committee on the Quality of Health Care, 2001). This conceptual model was developed to explore transfer of learning in Continuing Medical Education (CME). Pertinent transfer-related factors to the CME context were delineated.

Keywords: Training, Transfer of Learning, Professional Development

Training and development in organizations today has become an indispensable endeavor. Training is characterized by the delivery of events which includes design, develop and delivery of learning programs and services (Brinkerhoff & Apking, 2001). Transfer of learning needs to be the concern for all who plan, teach, evaluate, attend and support training programs (Ottoson, 1994). Though not known exactly, the transfer problem is believed to be so pervasive that rarely is there a learning-performance situation in which such a problem does not exist (Broad & Newstrom, 1992). Transfer of learning has been defined as the effective and continuing application of knowledge, skills, and attitudes learned/acquired from training on the job, generalization, and subsequent maintenance of these over a certain period of time (Baldwin & Ford, 1988; Broad, 1997; Ford & Weissbein, 1997; Xiao, 1996). According to Swanson and Holton (2001), transfer is considered a key practice in training and development among others such as development and delivery of training, use of subject matter experts, and information technology. In transfer of learning literature, only 10 percent of billions of dollars invested in training is claimed to translate to job performance (Awoniyi, Griego, & Morgan, 2002; Holton & Baldwin, 2003). This low return has had many educators and trainers concerned pushing researchers and practitioners to explore ways of improving it.

The presence of new technologies, new forms of work organization and speedy innovation in products and services has rapidly increased the pace of learning at work (Stern, Song, & O'Brien, 2004). These forces have enhanced the pursuit of continuing education by professionals to upgrade their knowledge and skills to improve their work. In particular, the healthcare industry faces the need to improve and provide professional development opportunities for those who work in this field. Continuing Medical Education (CME) has emerged as a distinct and definable activity that supports, maintains, develops or increases the knowledge, skills, and the professional performance of physicians who then provide services to patients, the public or the profession in view of improving patient outcomes (American Medical Association, 2006; Bennett, Davis, Easterling et al., 2000). CME activities can take the form of grand rounds, printed materials, journal clubs, radiology meetings, conferences, traditional or online courses, workshops, and ward teaching rounds, meet the expert/key pad sessions, self-assessment packages and programs, audio-visual and computer-aided sessions, reminders, feedback, and chart reviews (Amin, 2000; Davis & Fox, 1994; Rahman, 2005; Siddiqui, 2003).

Problem Statement

Similar to Human Resource Development (HRD), transfer of learning has been a challenge for professions that conduct continuing education. In these professions, transfer begins during the planning phase and is highly dependent upon the willingness of the learner to attend to information being presented, recognize the need for the learning, and be committed to using the information beyond the initial learning session (Caffarella, 2002). In CME, transfer of learning is particularly critical because human lives are at stake. Medical errors that may have been prevented account for the death of 44000 to 98000 patients building hospital costs ranging from \$17 to \$29 billion each year (Kohn, Corrigan, & Donaldson, 2000). These errors may be due to failure or delay in diagnosis, selection or administration of treatment, communication, equipment or system failures (Leape, Lawthers, Brennan, & Johnson, 1993). Since CME is essential to becoming a better doctor (Rahman, 2005), it is imperative that newly learned capabilities acquired in CME programs transfer to the physicians' practice. If this connection is not made, then resources and efforts put into the development and implementation of CME activities go to waste and human lives are lost. The transfer of learning issue has undoubtedly initiated interest among many Continuing Medical Education (CME) professionals to conduct studies that investigate whether CME activities are at all effective in

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achieving their intended goals. According to Amin (2000), there is less conclusive evidence to validate this relationship and thus the quest continues to see how the gap between provision of CME and indicators of transfer (change in physician behavior and improved health care outcomes) can be narrowed.

In HRD, transfer of learning has been studied more extensively in the training and development literature where various models have been created to understand the complex nature of transfer. Some models are based directly on the development, pre- and post-delivery phases of training to explore how transfer can be improved during these stages (Huczynski & Lewis, 1980; Milheim, 1994). Others introduce different foci such as training or HRD outcomes (Holton, 1996; Holton, Bates, & Ruona, 2000); involvement of other stakeholders to enhance transfer (Broad & Newstrom, 1992; Cornford, 1991; Yelon, 1992); and, consideration of structural elements influencing transfer (Caffarella, 2000). Many are based on the model developed by Baldwin and Ford (1988). In view of examining transfer of learning in the CME context, the modification of extant transfer of learning models is needed. CME is highly self-directed, with content, learning methods, and learning resources selected specifically for the purpose of improving knowledge, skills, and attitudes that physicians require in their professional lives (Bennett et al., 2000). It is also the final, most complex stage of physician education beyond the basic training that is often the least understood, inherently disorganized, unstructured, and extends between 25 to 60 years with competing interests such as patient care, teaching, research, and family (Amin, 2000). The purpose of this paper is to develop a conceptual model of transfer of learning in CME that delineates transfer-related factors pertinent to and given the nature of CME using Baldwin and Ford's (1988) transfer of learning model as a framework. The main research question was: what factors need to be considered for transfer of learning to take place in the CME context?

Theoretical Framework

Over time, several models have been developed to better understand the complex nature of transfer of learning. As mentioned earlier, Baldwin and Ford's (1988) model has been foundational for many transfer models that have emerged in later years. According to Chen and Ho (2001), Baldwin and Ford's model has also encouraged the emergence of empirical studies (Facteau, Dobbins, Russell, Ladd, & Kudisch, 1995; Mathieu, Tannenbaum, & Salas, 1992; Tannenbaum, Mathieu, Salas, & Cannon-Bowers, 1991; Telsuk, Farr, Mathieu, & Vance, 1995; Tracey, Tannenbaum, & Kavanagh, 1995) that investigate how individual characteristics, job attitudes and work environment affect transfer of learning.

In their model, Baldwin and Ford view transfer of learning as a system which consists of training-input factors, training outcomes/outputs, and conditions of transfer. *Training inputs* include training design (incorporation of learning principles, sequencing of training materials, job relevance of training content); trainee characteristics (ability or skill, motivation, and personality factors); and, work-environment factors (climatic factors such as supervisory or peer support, constraints and opportunities to perform learned behavior on the job). The *training outcomes* include the amount of learning that takes place in the training program and retention of that material after the program is completed. The *conditions of transfer* include both the generalization of learned material to the job and maintenance of trained skills over a period of time on the job. In this paper, Baldwin and Ford's transfer model was used as the theoretical framework to examine transfer in the CME context from a system perspective.

Methodology

To develop a conceptual model of transfer in CME, transfer of learning and CME literature were reviewed to identify appropriate transfer-related factors for the CME context. This review was developed through a search of key terms namely: transfer of learning, transfer of training, learning transfer, continuing medical education, continuing education, professional development, continuing professional development, and continuing professional education. Databases explored were EBSCO, ABI/INFORM, Medline, PsychInfo, ERIC, and PubMed. A practicing physician and CME expert was consulted to ensure comprehensive coverage of extant literature in CME. Through this exercise, the following limitations are acknowledged. First, extensive literature exists in areas of transfer of learning and Continuing Medical Education hence some literature may have been omitted. In addition, through examination of literature in CME and transfer of learning, researchers may identify other factors that could be considered as critical for transfer in the CME context. Finally, there is minimal literature that addresses the nexus between transfer of learning and CME, building the case for further exploration.

A Conceptual Model of Transfer of Learning in CME

The first section of the conceptual model of transfer in CME (Figure 1) outlines the three areas of transfer identified

by Baldwin and Ford (1988): trainee characteristics, training design and work environment. From these, three areas specific to the CME context were developed: physician learner characteristics, CME design, and physician work environment. Through a review of CME literature and reflection on the nature of CME, transfer-related factors, outcomes, and conditions for transfer were identified.

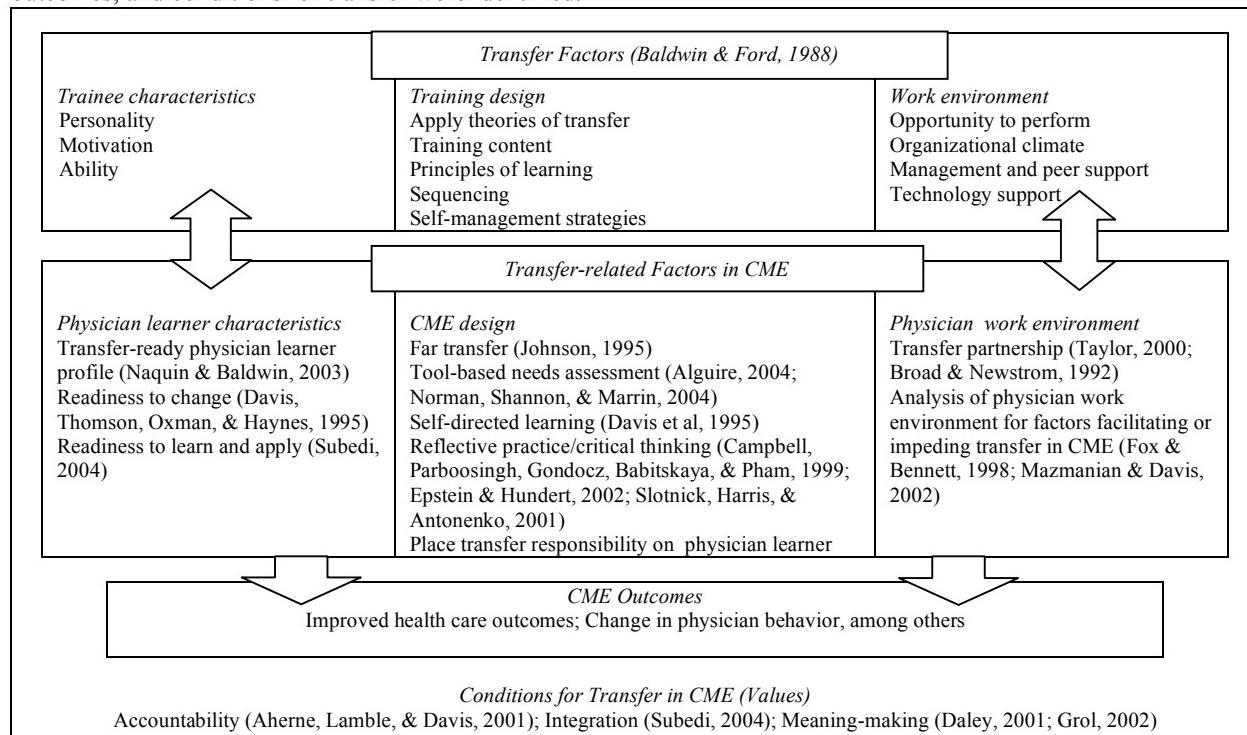


Figure 1. Conceptual model of transfer of learning in Continuing Medical Education (CME).

Physician Learner Characteristics

Transfer-ready physician learner profile (Naquin & Baldwin, 2003). Motivation plays a key role in learning and transfer in CME. According to Naquin and Baldwin, identifying and nurturing transfer-ready learners is a potentially productive way for improving transfer outcomes. Recent models of learning and transfer integrate the trainee characteristics as antecedents of transfer (Colquitt, LePine, & Noe, 2000; Holton et al., 2000; Mathieu & Martineau, 1997). However, active management in the identification of the most conducive characteristics for high transfer or creation of pretraining conditions to induce such dispositions has not been done (Naquin & Baldwin). To obtain a complete profile of the potential of individuals to achieve high transfer of learning, Naquin and Baldwin propose two recently discovered constructs of trainee characteristics: *motivation to improve work through learning* (MTIWL) (Naquin & Holton, 2002) and *learning agility* (Lombardo & Eichinger, 2000) need to be considered. Through the consideration of MTIWL, CME educators would examine both the motivation to train and motivation to transfer. They would work with physicians to identify their transfer-ready profile thus raising awareness on factors that would be instrumental in improving physicians' performance and ultimately patient outcomes. Also, CME educators can go beyond the physician learners' cognitive ability to consider other dimensions of learning agility as relates to people, results, mental, and change (Lombardo & Eichinger). While there are questions concerning the profile of a transfer-ready learner, how learners can be prepared to be more transfer-ready and ways of identifying a transfer-ready person profile (Naquin and Baldwin), the existing gap in knowledge presents opportunities for future empirical work on creating the transfer-ready profile.

Readiness to change (Davis et al., 1995). There are three systems that interconnected are used to make changes: self-directed curriculums, small group interaction, and organizational learning (Fox & Bennett, 1998). In addition to these systemic efforts to facilitate transfer of learning (change) for physicians, research is still needed to explore physicians' readiness to change (Davis et al., 1995). A preliminary step may involve using frameworks such as Grol's (2002) different stages of change to diagnose physician learners' disposition to change before or after participation in CME. In doing so, they can identify any resistance to change that may need to be addressed.

Readiness to learn and apply (Subedi, 2004). According to Bennett et al. (2000), CME educators should guide physician learners in continually assessing their own ongoing learning needs. They can collaborate with physician learners in identifying opportunities and resources that meet their learning needs to enhance performance and

promote lifelong learning skills. Through this process, CME educators can identify the physician learners' readiness to learn various CME topics that are relevant to physician learners and likely to be applied in their practice.

CME Design

Far transfer (Johnson, 1995). This may be referred to as high-road transfer (Salomon & Perkins, 1989), vertical transfer (Gagné, 1985), figural (Royer, 1979) or deep structure transfer (Detterman, 1993). In far transfer the learner needs to analyze the situation to recall rules or concepts needed to apply their knowledge and skills in that particular work situation (Johnson, 1995). This form of transfer is what occurs in CME. Physicians gain capabilities which will be applied in similar or different situations in their work environment. In the development of CME and in the physician work environment tools can be used to help with the recall process.

Tool-based needs assessment. CME needs assessment is moving towards using self-assessment tools that document learning deficiencies (Alguire, 2004; Norman, Shannon, & Marrin, 2004). Using these tools in CME design will aid in the development of learning activities that meet physicians' learning needs. In addition, they ensure that CME content is relevant to physicians and hence likely to be transferable to practice.

Self-directed learning (Davis, Thomson, Oxman & Haynes, 1995). Self-directed learning is at the heart of understanding the physician learner and should be taken into account in the design of CME activities. Optimal CME is highly self-directed, hence the content, learning methods, and learning resources are selected specifically for the purpose of improving knowledge, skills, and attitudes that physicians require in their professional lives and patient outcomes (Bennett et al., 2000). In CME, self-directed learning takes place in a variety of contexts such as self-initiated reading activities, solving clinical dilemmas, and self-evaluation of performance (Amin, 2000).

Reflective practice/critical thinking. CME educators need to develop activities that promote reflection and critical thinking. According to Slotnick (1999), physicians are not reflective about how they learn. Recent research suggests that physicians benefit from reflection on their progress and development of their next learning projects (Campbell et al., 1999; Epstein & Hundert, 2002). This is critical because individuals tend to change their behavior based on reflection and thereafter by an extrinsic or intrinsic motivation to change.

Place transfer responsibility on the physician learner. Since CME is self-directed and physicians are responsible for their own learning, the responsibility to transfer lies heavily upon the physician learner. In designing learning activities, CME educators can use action plans or other transfer management tools to help physicians undertake responsibility for transfer in more concrete ways.

Physician Work Environment

Transfer partnership. Transfer partnership is a balanced distribution of concern for and sufficient involvement of trainees, their managers or supervisors and trainers before, during and after training programs or courses (Broad & Newstrom, 1992; Taylor, 2000). In CME, transfer partnership may take on a different set of stakeholders: CME providers, physicians, patients. Transfer partnership can be used to enhance accountability and transfer in CME.

Analysis of physician work environment. Conducting such analyses provides CME educators with useful information that can be incorporated into the design of CME activities. There are several forces identified by doctors as the reason for change in their clinical practice: pressures from patients, colleagues, and healthcare institutions where they work; their personal lives; desire for new and enhanced competence; professional aspirations; stage of career; social and cultural environment of practice settings; curiosity; and a sense of personal and financial well being (Fox & Bennett, 1998). On the other hand, barriers to change include low motivation, lack of time, and lack of proper equipment in healthcare systems (Mazmanian & Davis, 2002). Consideration of such factors ensures that CME is relevant to the physician learners particularly as they attempt to apply new learning into their practice.

CME Outcomes and Conditions of Transfer

CME outcomes are defined as results or consequences of CME events (Moore, 2003) and may include change in physician behavior, improvement in patient care or organizational processes, among others. Consideration of transfer of learning factors related to physician learner characteristics, CME design and physician work environment contributes to development of CME activities that provide physician learners with the resources and knowledge to become better in their work. Even so, to enhance transfer in CME, certain values/conditions need to be in place.

Accountability (Aherne, Lamble, & Davis, 2001). Meeting CME requirements is not in itself a measure of accountability (Holm, 2000). A culture of accountability for transfer needs to be created and maintained in the work environment. Clarke (2002) states that professional workers in organizations possess considerable autonomy in relation to decision-making and experience minimal supervision which may in turn contribute to different expectations regarding how transfer is to be applied. Since physicians operate somewhat autonomously in their work environment, particular emphasis on accountability of CME transfer is needed through various structural elements in the physician work environment. These may include computer programs that provide physicians with the opportunity to record transfer of learning incidents or areas of change in physician practice.

Integration (Subedi, 2004; Uhl, 1992). Future directions for transfer in CME may involve the integration of tools and strategies in the daily routines of physicians. Integration can begin simply in needs assessment and learning where it is important to recognize these elements as part of daily professional life in medicine, using these as a basis for future needs assessment and planning (Grant, 2002). In the study by Perol, Boissel, Broussolle et al (2002), integration of personal-office-visit diaries was used to help practitioners identify learning needs with greater specificity. Implications for this would be the development of CME that better meets physicians' learning needs, hence making it more relevant to them and increasing the probability of transfer of learning. The more integrated the process between learning and practice, the higher the probability that transfer of learning is taking place.

Transfer in CME as a meaning-making process. Adult learning is about constructing knowledge or meaning-making (Merriam & Leahy, 2005). While training and Continuing Medical Education (CME) are similar in various ways, transfer of learning seems to take on a slightly different meaning in professions that conduct continuing education. In these professions, transfer entails making meaning of learning experiences for personal and professional development. In a study by Clarke (2002), perceptions of in-service training by social service workers undermined the transfer of learning not because of the characteristics of the trainees but due to aspects in the work environment and nature of work itself. Daley (2001) found that in the professional practice of nurses, lawyers, social workers and adult educators, professionals did not see transfer of learning as an outcome of their educational experience. On the contrary, in cases of Continuing Professional Education (CPE), transfer was viewed not as the end of learning but an integral part of meaning-making where incorporating new knowledge was more of a recursive and transformative process rather than direct transfer of information from one context to another. Transfer of learning in CME may need to be clarified since physicians participate for both personal and professional development purposes. As Clarke (2002) states, this will be particularly useful in elimination of confusion that often arises in expectations of whether training should be applied wholly or in part.

Conclusion and Recommendations

The conceptual model of transfer of learning in CME was developed to highlight factors that need to be considered for transfer to take place. Transfer of learning in the medical field is important to consider because CME is being developed and implemented all the time. As Bennett, Davis, Easterling et al (2000) describe, the practice of medicine has been bombarded by rapid forces that continually demand a new way of healthcare. These forces include rapid advances in biomedical knowledge and its application to the practice of medicine; use of CME as evidence of competence for medical practice when granting medical re-licensure, specialty recertification, among others. To enhance transfer, various strategies as identified in literature can be employed by adult educators and HRD practitioners (Merriam & Leahy, 2005): (a) include participants in program planning; (b) incorporate strategies in program design that link to transfer; and, (c) ensure a supportive transfer climate. For CME, parts of these recommendations have been put into practice such as including physicians in the planning of CME which happens in the needs assessment with efforts to ensure that planned CME meets the physicians' needs. Further clarification is needed on strategies that enhance transfer through program design and creating a more supportive transfer climate.

Contributions to Human Resource Development

In the February 2004 issue of *Advances in Developing Human Resources* journal, the connection between Continuing Professional Education (CPE) and HRD was discussed at length with several propositions made. Both fields: (a) are concerned with individual development; (b) involve workplace learning; and, (c) involve adult learners. An emergent future research question was: since both CPE and HRD involve workplace learning, how can these fields work together to enhance individual development? The development of the conceptual model of transfer of learning in CME is an initial step towards a collaborative link between CPE and HRD. Through this model, the discussion is initiated on examining transfer from the HRD perspective and its application in the professions that conduct continuing education, realizing that certain factors will be deemed more appropriate and/or critical than others in a given context. Following the conceptual model of transfer, CME professionals will need to undertake new roles through which collaboration with HRD professionals can be enhanced.

CME as facilitator of organizational improvement. CME needs to move from delivering content to individual clinicians towards being a facilitator of organizational improvement (Price, 2005). This deems CME educators with the responsibility to play a more active role in transfer of learning since by delivery of CME content, a variety of intended outcomes are targeted. Research is needed to determine the effect of integrating CME with approaches in organizational change on professional competence, organizational processes and patient outcomes (Price). With extensive work on organizational development, HRD professionals can provide input to identify such approaches.

CME as part of a system versus standalone endeavor. CME programs that operate independently are much less likely to impact practice than programs that occur as part of a multifaceted intervention (Davis et al., 1995; Oxman, Thomson, Davis, & Haynes, 1995). This calls for systemic collaboration between CME program developers, physicians and other CME stakeholders towards the improvement of transfer of learning. Using systems thinking, HRD professionals can provide useful insights into collaboration of different stakeholders towards meeting CME outcomes.

CME as strategic partner. CME planners need to partner with key stakeholders in organizations (such as personnel from quality improvement, process improvement) to design, deliver, and evaluate multifaceted programs (which are reinforcing, interactive, and case-based) that provide practice tools and have a greater likelihood of changing practice (Davis et al., 1995; Oxman et al., 1995; Price, 2005). In this role, CME professionals can be strategic partners in collaboration for organizational change (Price), provide strategic health system resource support and facilitate physician performance through learning and change (Aherne, Lamble, & Davis, 2001). To fulfill this role, HRD professionals can work with CME educators to explore implementation of strategic planning principles.

CME as facilitator of learning. CME providers need to become facilitators of learning rather than disseminators of information. Sullivan (1999) elaborates that a shift from didactic teaching in online CME to emphasis on discussion, examination and expression of one's views is based on the assumption that instructors are not trying to teach learners how to treat problems which they may already know, but to help them organize and utilize their knowledge. Amin (2000) advocates for a paradigm shift towards physicians' autonomy in their education where learning (not teaching) is the focus of continuing education. In view of extensive literature on training and development, HRD professionals can work with CME educators towards facilitating learning.

Physicians participate in CME in order to keep up-to-date with new capabilities required to face the new demands of the job. As such, the journey towards becoming better physicians entails a back and forth process between their practice and learning. CME should therefore not encompass learning for learning sake; rather, transfer of learned capabilities needs to occur in order to bring about change. In the long run, CME will become not just a one-time activity to keep abreast but, as described by Bennett et al., (2000), a distinct and definable activity that supports the professional development of physicians as lifelong learners.

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